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Omni-Channel Retail and the New Age Consumer: An Empirical Analysis of Direct-to-Consumer Channel Interaction in the Retail Industry

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Submitted to

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By

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1. Abstract

It is indisputable that the internet has become a necessary component of contemporary multi-channel retail, as more consumers are choosing to purchase goods online each year. As online spending continues to grow, many have called into question the future of brick-and-mortar retail. This thesis seeks to empirically prove that brick-and-mortar retail remains not only relevant, but indispensable in direct-to-consumer business models. The basis of this conjecture is the idea of channel synergism, in which online and brick-and-mortar operations are complementary. This theory is predicated on the emergence of the omni-channel retail, which is characterized by the integration of the various direct-to-consumer (D2C) channels to support cross-channel consumer interaction. To empirically test this hypothesis, key operating metrics were examined over the five year period from 2007 to 2011. By examining profitability trends and several D2C channel relationships, empirical support is developed to substantiate the claim that brick-and-mortar operations are not being driven into obsolescence by the growing prevalence of e-commerce transactions.

2. Literature Review and Background

2.1 Background

2.1.1 Inception of e-commerce

The roots of e-commerce can be traced back to 1991 when the internet became officially available to the public. Public adoption of the internet was a gradual process, as consumers were initially constrained by limited connectivity and inadequate security. The term "e-commerce" was traditionally associated with data transfers that allowed users to conduct business transactions electronically. Internet commerce was finally able to flourish with the introduction of online payment systems and more stable connections, which allowed consumers to conduct online transactions with greater ease and security. With these technological innovations, the meaning e-commerce grew to include all online purchases of goods and services. (ecommerce-land)

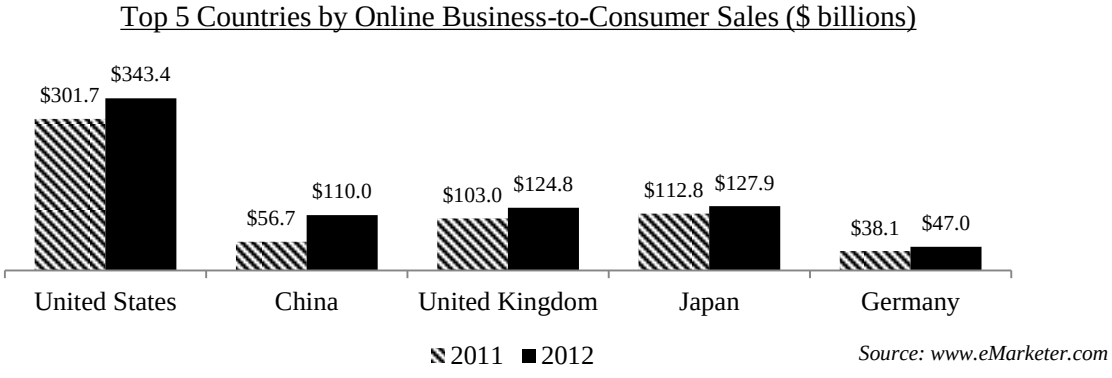
The proliferation of online purchasing radically altered the world of retail in the 1990s. 1995 marked the birth of Amazon.com and AuctionWeb (EBay), both of which were instrumental in setting the stage for future online retailers. These firms greatly increased the popularity of the internet as a shopping outlet, as they were some of the first retailers to allow electronic purchases (ecommerce-land). The creation Yahoo and Google in 1998 then allowed internet users to navigate the ever-expanding reaches of the online world with increased ease (Internet Retailer 2009). Another important landmark was the development of PayPal in 1998, which offered online consumers greater convenience and protection (Internet Retailer 2009). That same year, DSL (or Digital Subscriber Line) was invented. DSL offered a much faster and perpetual internet connection, which greatly increased online activity and spending (Ying 2008). After the invention of DSL, internet spending doubled from $8 billion

in 1998 to $20 billion in 1999 (Internet Retailer 2009). These key events set the stage for the rapid growth and development that continues to define e-commerce today.

2.1.2 State of Retail e-Commerce in 2013

Since the initial growth stages of the internet in the 1990s, internet commerce has grown to redefine the fabric of modern society. According to eMarketer (2013), total business to consumer (B2C) spending increased approximately 21% year-over-year to reach over $1 trillion around the world. This staggering figure is expected to increase by an additional 18 percent in 2013. As of 2012, the United States has retained a dominant share of gross sales and currently represents over one third of worldwide online purchasing (eMarketer 2013). Exhibit 2.1.2a below presents the five countries with the largest total online spending:

Exhibit 2.1.2a

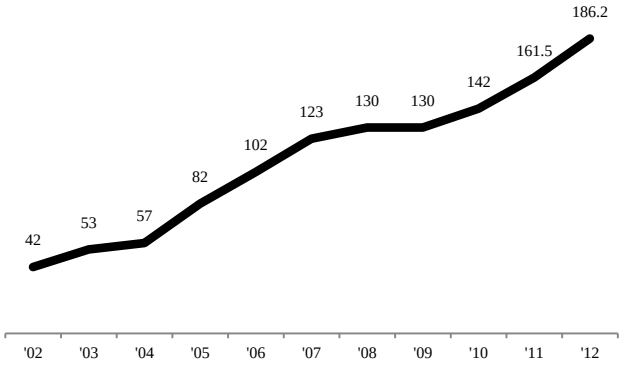


The United States is expected to retain its position as the largest source of online consumer spending through 2016, though China is forecasted to rival the U.S. by 2016 (eMarketer 2013).

Online retail purchasing has followed a similar trajectory, and represented over half of total internet spending in the United States in 2012 (Lipsman 2013). In the fourth quarter of 2012 alone, retail e-commerce sales totaled $56. 8 billion, which is the first time the figure has exceeded $50 billion (Lipsman 2013). Historic retail e-commerce growth in the United States is depicted in Exhibits 2.1.2b and 2.1.2c below:

Exhibit 2.1.2b

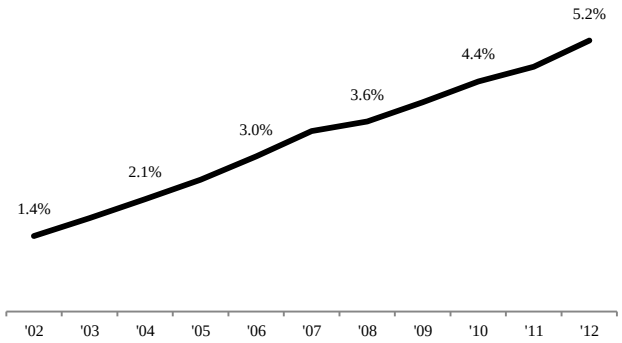
Retail e-Commerce Sales in the U.S. ***($ billions)***



Source: comScore.com

Exhibit 2.2.1c

e-Commerce Sales as % of Total Retail Spending



Source: U.S. Census Bureau

The above charts illustrate the rapid increase in the prevalence and importance of an online presence in the retail sector. In the United States, total online retail sales have increased at a compound annual growth rate of 16.06% over the past 10 years. In addition, online sales now comprise nearly 6 % of total retail sales, which represents approximately an 800% increase from 2002. This astounding growth has made internet retail a necessary component rather than simply a strategic possibility in the retail industry. As such, understanding the manner in which online operations interact with other channels has become imperative in contemporary retail strategy. (Lipsman 2013)

2.2 Literature Review

2.2.1 Theoretical Framework of Maximizing Profitability by Channel Addition

e-Commerce has indisputably altered the manner in which consumers choose and expect to interact with retailers throughout the purchasing process. As such, almost all retailers have developed an online channel to meet consumer demands. Though the addition of an online channel was uncharted territory for retailers, the idea of a multi-faceted direct-to-consumer system predates the inception of e-commerce. Rowland Moriarty and Ursula Moran (1990) examined the effects of adding additional channels in their Harvard Business Review publication, *Managing Hybrid Marketing Systems*. Moriarty and Moran explore the concept of a hybrid marketing system, which they describe as a business model that allows customers to directly purchase goods through several different channels. They cite IBM as an example, as the Company created a hybrid marketing system by allowing customers to purchase goods through the mail in addition to through specialized salespeople. Moriarty and Moran scrutinize the strategy of several other companies that they believe effectively utilize multiple channels and conclude: "a company that makes its hybrid system work will have achieved a balance between its customers' buying behavior and its own selling economics" (Moriarty and Moran). In essence, companies that use multiple distribution channels in their direct-to-consumer operations can greatly increase their customer base and subsequently their revenue generating potential. This is only true, however, if the new channel allows the firm to access a customer segment that was not previously served. If the new channel simply provides existing consumers an alternative means of purchasing goods, it will cannibalize the revenue generating capacities of existing segments. Thus the addition of new business segments is inherently risky, as they may ultimately harm the firm's overall profitability. The obvious

shortfall in this analysis in the context of this study is the absence of the internet. The underlying philosophy remains highly relevant, however, as the basic principle is still applicable in a discussion centered on e-commerce. (Moriarty and Moran 1990)

2.2.2 Conflicting Hypotheses Surrounding the Impact of the Internet on the Retail Industry

The rapid rise of e-commerce throughout the past two decades has left retailers with the undeniable reality that online operations are a necessary part of a competitive strategy. This is where certainty ends, however, as the rapid growth in online spending resulted in a division among retailers as to the value of this new technology. Enthusiasts embrace the complementary hypothesis, which suggests that the internet will allow companies to reach entirely new customer segments without negatively affecting physical store performance. Conversely, the cannibalization hypothesis contends that online sales are simply displacing in-store sales and are detrimental to in-store performance. Despite extensive research in this subject area, a definitive answer is noticeably absent from contemporary retail knowledge.

The aforementioned increase in e-commerce sales has left retailers little choice regarding the decision to adopt e-commerce as a component of their D2C operations. Following Moriarty and Moran's (1990) conclusions, this rise in e-commerce sales should benefit firms if the internet is allowing retailers to access new consumer segments. Supporters of the cannibalization hypothesis argue that online purchases are coming largely from existing brick-and-mortar consumers. Forrester Research Director, Carrie Johnson, is one such supporter of this hypothesis. She states that the increase in e-commerce sales is "little more than online cannibalizing in-store sales" (Schuman 2008). Johnson's statement

encapsulates the concern shared by many members of the retail industry, who claim that cannibalization will drive them out of profitability.

Supporters of the complementary hypothesis argue that e-commerce is a powerful revenue-generating tool that has allowed retailers to reach entirely new consumer bases. A recent study conducted by PricewaterhouseCoopers (PwC) suggests that consumers are increasing their total purchase volumes, as opposed to simply switching their spending to online channels (Cianciulli and Yeung 2012). In February of 2012, PwC released the results of a survey that profiled over 11,000 shoppers around the world in order to assess the validity of common multi-channel retailing claims. The results indicate that consumers are not choosing to purchase goods online instead of in-store, but rather increasing total retail spending. The report claims that, "the physical store remains the centerpiece of the purchase journey, while devices are used significantly for product research and deals [and] Consumers are actually spending more with their favorite multichannel retailers, not just shifting some purchases to a different channel" (Cianciulli and Yeung 2012). This would imply that Moriarty and Moran's criteria for the successful addition of a new channel has been satisfied, as new consumers are being reached.

Despite the copious amounts of research surrounding the proliferation of online shopping and its effect on the retail industry, there is a noticeable absence of a conclusive answer. Both the cannibalization hypothesis and complementary hypothesis have presented empirical evidence and case studies that support the respective positions. Thus the question remains ultimately unanswered as to the exact impact that the rapid rise in e-commerce spending has had on the retail world.

2.2.3 Rise of Omni-Channel and Implications for Contemporary Retailers

Using several different channels to market goods to consumers (multi-channel retailing) is a strategy that has been employed by retailers for an extensive period of time. This business model treats each channel as separate business segments that are used to reach different groups of consumers. Multi-channel retailing has become a standard business model in the retail industry, as nearly all major firms have developed online operations to complement their existing stores. This model, however, neglects the increasingly apparent reality that consumers do not exhibit a constant preference regarding the channel through which they purchase goods. This developing consumer behavior trend has given rise to a new breed of retail that has been labeled "omni-channel retail". Erin Harris (2012) provides insight into this emerging phenomenon in an interview with Ravi Bagal, the vice president and global managing director of retail and distribution at Verizon Wireless. When asked to define omni-channel distribution, Bagal states, "We went from single channel to multichannel, and in the 2000s, the phrase was cross-channel. We started to see more integration between brick-and-mortar and Web channels as well as more functionality between the two. But, it was episodic. Omni-channel is the final step of the evolution, from a single channel to a complete and holistic experience that merges these various touch points" (Harris 2012). More concisely, the omni-channel model assumes that customers will interact with a company using several different channels before making a purchase. For example, a customer may visit a physical store to inspect merchandise before ordering that same product online. The defining characteristic of omni-channel distribution is the assumption that any given customer will evaluate the product-of-interest at several different points before making their final purchase. This differs from the traditional multi-channel concept because there is

no longer channel A and channel B consumers. Instead, there is a single consumer base that interacts with retailers across all available channels. The rise of this phenomenon has resulted in the rise of a behavior known as "showrooming", which many retailers cite as the cause of the decline in physical store profitability.

Ann Zimmerman (2012), a writer for the Wall Street Journal, describes showroomers as "shoppers who scope out merchandise in stores but buy on rivals' websites, usually at a lower price" (Zimmerman 2012). A recent study by William Blair found that on average, Amazon.com offers goods at an average of 11% cheaper than brick-and-mortar locations (Anderson 2011). This trend poses a growing threat to the profitability of physical stores, which are already feeling pressure from online competition. Adrianne Shapria, a retail analyst at Goldman Sachs predicts that consumer preferences are shifting to favor shopping online (Zimmerman 2012). According to data compiled by Placed and Gartner research, 60% of consumers visit brick-and-mortar locations with the intention to purchase goods from a different outlet (Moses 2013). Even more disconcerting for brick-and-mortar retail is the finding that indicates only 10% of consumers purchase goods from the retailer they showroomed (Anderson 2013). Many retailers have already begun to voice concerns about this new trend, and have expressed concern that it may have devastating implications for future profitability. For example, Target has asked suppliers to provide exclusive products to prevent showrooming (Zimmerman 2012). Where product differentiation is not possible, Target has attempted to negotiate lower prices in order to compete with online competitors (Zimmerman 2012). Zimmerman quotes Target's executive vice president in stating: "what we aren't willing to do is let online only retailers use our brick-and-mortar stores as a showroom for their products and undercut our prices" (Zimmerman 2012). This statement

reflects the growing fear that internet retail is negatively affecting the profitability of brick-and-mortar operations, which many predict will continue in to the future.

2.2.4 Omni-Channel Retailers and the Future of Physical Stores

Members of the retail industry have openly predicted the demise of brick-and-mortar retail, which the Burning Platform (2012) describes as "a slow motion train wreck". Martin Manley (2012), a former United States Assistant Secretary of Labor and current CEO of RedLink, analyzes this decline in his article, *Store Closing: the Death of Brick and Mortar Retail*. Manley states, "Today, e-commerce is not just killing some stores – it is killing almost all stores" (Manley 2012). Manley predicts that the decline of physical-store is likely to accelerate, as physical retailers generally enjoy small profit margins. As such, shrinking in-store purchases combined with high leverage will increase the likelihood that physical retailers will become unprofitable. Manley also notes that online retailers enjoy lower fixed costs, 24/7 operations and a larger product selection. These competitive advantages will likely fuel the expansion of internet retail, which will accelerate the demise of brick-and-mortar retail. (Manley 2012)

The aforementioned showrooming trend is another source of considerable concern for retailers. In their study, *Free Riding and Consumer Retention Across Retailers' Channels,* Sebastian Van Baal and Christian Dach (2005) examine the validity of retailers' claim that brick-and-mortar stores are becoming showrooms for online purchasing. Based on their findings, they are able to conclude that nature of multi-channel retail is highly conducive to showrooming, the prevalence of which will likely increase as consumers purchase more products on the internet. Van Baal and Dach's (2005) analysis is predicated on the theory of

free riding, which states that an inability to prevent use of a resource will produce a suboptimal economic result (Van Baal and Dach 2005). They explain that this theory is applicable to the retail industry because of two inherent characteristics. The first of which is that most retailers are unable to distinguish purchasers from free riders both online and in-store, which makes it impossible to guard against showrooming. The second is that most retail products are available at multiple outlets, which drastically increases the probability of free riding behavior. (Van Baal and Dach 2005)

The large number of outlets through which customers can purchase products is yet another reason that experts predict declining profit margins in the retail industry. Erik Brynjolfsson, Yu Hu and Michael Smith (2003) investigate the implications of this new phenomenon in their publication, *Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Bookseller*. In this study, Brynjolfsson, Hu and Smith examine the extent to which book retailers are impacted by the introduction of online competitors. The results of their study show that consumers benefit from the addition of outlets from which they can purchase goods. They write, "Limits on the number of titles Internet retailers can present and sell to consumers are substantially lower. As a result, Internet customers have easy access to millions of products that they could not easily locate or purchase through brick-and-mortar retailers" (Brynjolfsson et al. 2003). The implication of this development is the loss of power for brick-and-mortar retail, which loses a large degree of power in determining prices. As such, the industry moves closer to a model of perfect competition, in which firms are compelled to accept prevailing market prices therefore accepting lower profit margins. Neil Stern (1999), a partner at McMillan Doolittle echoes this concern in his publication, *The Impact of the Internet on Retailing*. Stern predicts, "others can

easily sell [similar products] which could lead to extreme margin pressures. High sales volume may not translate to huge profits" (Stern 1999). Alternatively stated, the benefits associated with reaching a wider consumer base via online operations will likely be offset by margin compression.

2.3 Summary of the Current Retail Environment and Literature Reviewed

Internet spending has greatly increased over the past decade and is projected to grow in both total dollar volume and as a percentage of total retail spending. The extent to which this has negatively or positively impacted retailers has been the source of considerable debate. Optimists have argued that aggregate spending has increased due to retailers' newfound ability to reach new consumers segments, which Moriarty and Moran (1990) is the key determinant of multi-channel success. Pessimists have rejected this idea, and contend that new retail sales are simply displacing brick-and-mortar purchases.

As consumers and companies have become more sophisticated, the omni-channel retail system has emerged. This model is predicated on the idea that the new-age shopper interacts with retailers across multiple channels. Optimists have applauded this evolution, as traditional brick-and-mortar locations have benefited from consumers' ability to shop from home. Skeptics have voiced concern over the emergence of showrooming behavior, in which consumers use brick-and-mortar locations to examine products before purchasing goods online. The answer to this controversy remains unanswered, and has resulted in widespread doubt regarding the future and current utility of brick-and-mortar retail.

3. Research Questions and Hypothesis

Many hypotheses exist as to the manner in which online and physical store channels interact. The purpose of this thesis is to empirically prove that brick-and-mortar retail is not doomed to failure in the new age of omni-channel retail, but remains a key element in a competitive multi-channel retail strategy. Though showrooming behavior has been proven to not only be a prevalent component of omni-channel retail, this study seeks to prove that this trend is not damaging physical stores. Instead, this behavior will serve to emphasize the importance of using physical store locations to drive web traffic.

More concisely stated, the emergence of the omni-channel retail mindset will produce a synergistic return indicated by key performance metrics. The implication of this hypothesis is that the rapid growth in e-commerce will produce higher aggregate returns for the retail industry as a whole. Thus the escalation in online retail activity will produce higher aggregate profitability instead of simply rearranging the composition of collective revenue streams.

4. Analysis and Results

4.1. Methodology

4.1.1 Data Sources

Metrics used in this thesis were obtained from two primary data sources, which are discussed in detail below. All financial information was taken from Capital IQ while online performance metrics were taken from Internet Retailer's Top 500 Guide database.

1. Capital IQ: A division of Standard and Poor's that provides financial information to clients in the financial services industry. Access to this database was granted by Endeavour Capital LLC, which is a private equity firm headquartered in Portland,

Oregon. All financial data (excluding online performance metrics) was obtained using Capital IQ.

2. Internet Retailer Magazine's Top 500 Guide: Internet Retailer Magazine was founded in 1999 by Faulkner & Gray (a unit of Thomson Reuters Corporation). It was later purchased by the CEO of Faulkner & Gray, who formed an independent company called Vertical Web Media. Vertical Web Media provides information products and is currently the largest publisher of e-commerce data. The Top 500 Guide is a database that publishes the online performance metrics of the companies with the largest online retail operations. Information included in this database is compiled using data from third-party providers and direct interviews with companies. The Top 500 Guide online database was chosen for this analysis because it contained the most extensive collection of metrics relevant for this analysis. Data is presented on an annual basis from 2007 to 2011.

4.1.2 Company Sample List

Companies included in the statistical sample was determined largely by the information available presented in the data sources (see 4.1.1 Data Sources). For a complete list of companies included in this analysis, see Table A.1 in the appendix. Retailers were included in the sample if they met all of the following criteria:

1. Included in Internet Retailer Magazine's Top 500 Guide
2. Primary industry – consumer goods / consumer discretionary (classified by Capital IQ)
3. Physical stores used to market products in direct-to-consumer channel
4. Public company

5. Enterprise value = $100+ million (thus excluding early stage growth companies)

4.2. Analysis and Results

4.2.1Overview of Analyses

To test the hypothesis of this thesis, retail operating data was taken from the sample list and analyzed over a five year period beginning in 2007. Various items from the primary financial statements were compared to key online operating metrics in order to empirically analyze critical relationships. Key online operating metrics include: online sales, monthly unique visitors and monthly visitors. The monthly unique visitors figure represents the total number of individual people that visited a company's website while monthly visitor data is the total number of times a company's webpage was visited. A consumer that visits a specific three times in a month will therefore be reported as one unique visitor and three monthly visitors. Since the data is presented in a panel format, all regressions were conducted using a fixed effect model in Stata. A fixed-effects model is necessary in order to accommodate the multi-dimensional nature of the data, as there is both time-series and cross-sectional variation. Thus all regressions included in this study take into account both the progression of time and inherent variation between sample companies. A complete list of the retailers included in this sample can be found in Exhibit A.1 in the Appendix.

4.2.2 Importance of Monthly Visitors and Monthly Unique Visitors

Before the drivers of online traffic (monthly unique visitors and monthly visitors) can be examined it is necessary to confirm the value of attracting a larger volume of internet consumers. In order for a company to generate sales online, they must attract consumers to its

website. To confirm that attracting a larger quantity of consumers correlates to increased revenue, online sales are compared to monthly unique visitors and monthly visitors. When tested in a fixed-effects regression analysis, the aforementioned statement was confirmed. Each additional unique visitor and monthly visitor was correlated to an additional $31.41 and $8.57 of online revenue, respectively. Though this principle seems intuitively obvious, confirming the value of increasing internet traffic is requisite for subsequent analyses. More detailed information can be found in section A.3 of the Appendix.

4.2.3 Physical Store Investment Driving Web Traffic

To empirically prove (or disprove) the hypothesis that brick-and-mortar locations remain an essential component of multi-channel retailing, the relationship between physical store investment and online traffic is examined. The underlying theory of this analysis is that investment in physical stores is vital to generating web traffic, which is requisite for increasing web sales (see *section 4.2.2*). There are two primary ideas that lead to this conjecture. First, a company that increases its physical store presence is likely to increase brand equity and recognition. Physical stores can act as a marketing vehicle that not only advertises the brand name, but specific products as well. Stores also give consumers the opportunity to physically inspect products, which they may later purchase online. As such, more locations and updated appearances increase the likelihood that a consumer will become aware of a brand and subsequently visit the internet site.

To test for a relationship between in-store investment and web traffic, capital expenditures in period t-1 are compared to the growth in web traffic. Capital expenditures are used to quantify in-store investment because they are generally comprised of expenses arising

from store opening, preopening relocation in addition to remodeling, maintenance and other miscellaneous store-related items. Examining changes in square footage or physical locations would not be sufficient in this analysis because these figures fail to include expenses incurred to improve or relocate existing stores. These activities are crucial to attracting consumers, as new locations and appearances consistent with consumer tastes are necessary to remain competitive due to the dynamic nature of the industry. Thus capital expenditures reflect the entirety of a company's' investment in its physical stores. This analysis utilizes capital expenditures in period t-1because the benefits of brick-and-mortar investment would likely not be realized until the subsequent financial reporting period.

The purpose of this analysis is to prove that investing in physical stores would positively impact online traffic. As such, it would be expected that a higher level of capital spending would correlate to a more substantial increase in monthly unique visitors and total monthly visitors. This is indeed the case, as each additional $1 million of capital expenditures correlated to an approximate 3,800 and 8,500 increase in monthly visits and monthly unique visitors in the year, respectively. This positive correlation indicates that a firm investing heavily in its physical locations enjoys heavier internet traffic, which affirms the assertion that physical stores are a power tool in generating web traffic. More detailed information can be found in Exhibit A.4 in the Appendix.

4.2.4 Margin Analysis

The propagation of online purchasing in the retail sector has precipitated widespread concern about margin compression. As online consumer spending increases, many predict that price competition will intensify. Existing firms will subsequently be forced to reduce

online profit margins in order to compete with new entrants that are attempting to attract customers by undercutting existing prices. The new showrooming phenomenon is predicated upon the popular perception that a consumer may find a cheaper product online. A showroomer will first visit a firm's physical store in order to evaluate the product-of-interest with or without an initial intention to purchase.

It is necessary to address this issue because widespread margin compression would serve as a basis for rejecting the hypothesis of this study. To examine the validity of the aforementioned speculation, the average margins of the sample companies were examined over the five year period. The specific margins that are examined are overall gross margin, retail gross margin and EBITDAR margin. The gross margin ratios were calculated by dividing gross profit by revenues earned from the sale of goods and do not include other income sources. These are critical ratios because they represent retail firms' ability to earn a profit on the sale of their goods. They also indicate the strength of the brand, as companies with strong brand value are able to command higher margins. The EBITDAR (earnings before interest, taxes, depreciation, amortization and rent) is also a critical measure of financial health because it represents the percentage of cash generated from operating activities. It depicts operational performance by ignoring differences in capital structure, taxes and treatment of rent expense and lease obligations. Rent is excluded because firms utilize different rent structures in leasing their retail space. The trends are illustrated in exhibits 4.2.4a and 4.2.4b below and additional information can be found in Exhibit A.5 in the appendix.

Exhibit 4.2.4a

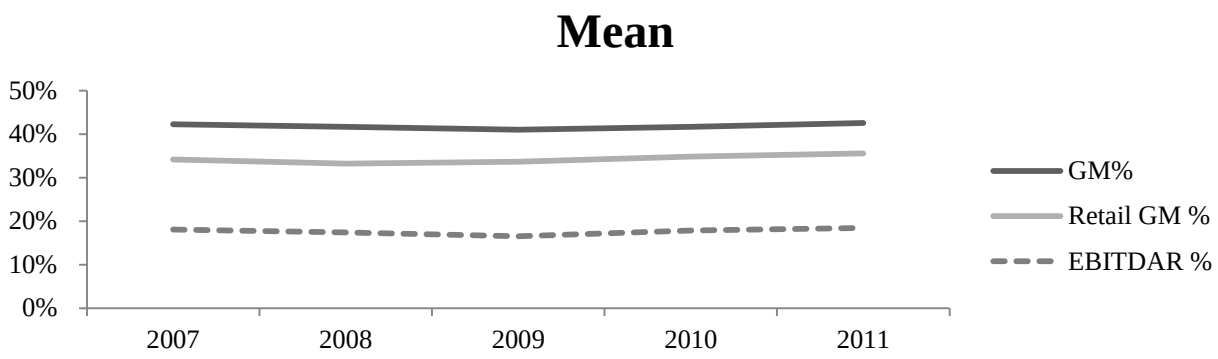
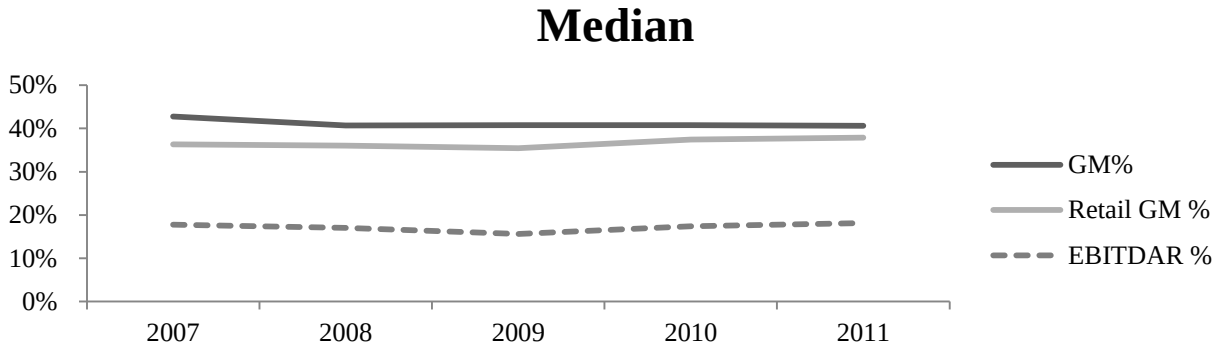


Exhibit 4.2.4a



The above graphical illustrations clearly disprove the claim that increased online price competition will lead to lower profitability for retail firms. The data also shows that aggregate retail margins have not contracted, but have in fact increased. Retail margins are likely lower than total firm margins because many firms in the sample set use a limited number of outlet stores to sell products that are out-of-season or were overstocked.

4.2.5 Channel Growth Rate Comparison

In order to assert the hypothesis that brick-and-mortar retail is not being cannibalized by the increase in e-commerce sales, year-over-year growth is compared between the two channels. By comparing the year-over-year growth of physical store and online revenue, it is apparent that the recent surge in online spending has not come at the expense of physical locations. A statistical analysis of the growth rates shows that an increase in online sales corresponds to an increase in the brick-and-mortar segment. Over the period examined in this study, a one percent growth in online revenue corresponds to a 0.12 percent growth in brick-and-mortar locations. Given that on average, brick-and-mortar revenues comprise 94% of total revenues, a 12 basis point increase in sales represents significant growth. These results serve as evidence in support of a complementary relationship while disproving the claim that an increase in online sales represents a transfer of spending from brick-and-mortar stores. The regression results are summarized in Exhibit A.6 in the Appendix.

4.2.6 Brick-and-Mortar Profitability Analysis

To prove that the introduction of internet competition is not reducing the profitability of brick-and-mortar retail, the final analyses of this study examines the relationship between online operations and physical store profitability. The underlying theory of the initial hypothesis states that brick-and-mortar operations have a complementary relationship with an online channel. This is predicated on an assumption of channel synergism, in which increased online traffic and purchasing would correlate to higher profitability in the brick-and-mortar channel. To test this theory, total online sales and online sales as a percentage of company

revenue is compared to the brick-and-mortar gross margin. For more information regarding the regression, see Exhibit A.7 in the Appendix.

The results of this analysis show that increasing e-commerce sales does not negatively impact the profitability of brick-and-mortar locations. For the sample set used in this study, a larger amount of online sales (both in pure dollar terms and as a percent of total revenue) corresponds to higher profit margins in the brick-and-mortar channel. Previous studies have predicted that the introduction of the internet would produce downward pressure on margins due to increased price competition (Stern 1999, Brynjolfsson et al. 2003). The results of this analysis prove that this trend has not manifested itself, as the inverse effect appears to be true. These findings point to the likelihood of a synergistic relationship between the channels, as retailers that are able to capitalize on internet operations enjoy higher profit margins on brick-and-mortar transactions.

5. Conclusion

5.1 Findings of Study

The analyses conducted in this study support the initial hypothesis that brick-and-mortar retail is highly relevant in the omni-channel retail revolution. The positive relationship between brick-and-mortar investment and web traffic indicates that physical stores are invaluable attracting consumers. Firms that are actively investing in their physical locations are rewarded with greater web traffic, which this study establishes as a prerequisite for generating internet revenues. A larger amount of purchases online is also shown to correlate positively with gross profit margins, which indicates that a strong online and physical presence strengthens the retail brand. This finding is significant because it signals that a

widely recognized brand is an effective way to combat the intensifying price competition stemming from new online market entrants. Furthermore, mean and median (retail and overall) gross profit and EBITDA margins show no sign of a decline. Finally, a growth rate comparison between the two channels shows that there is a positive correlation between online and in-store revenues which points to likelihood of channel synergism.

5.2 Shortcomings in Analysis and Questions for Future Research

The primary constraint in this study was the availability of information. Though financial information was easily accessible through the mandatory annual financial statements, web data is largely proprietary. This thesis would be greatly benefited by access to propriety online performance data. As such, it would be valuable to conduct future studies with more detailed web metrics obtained from each company specifically. For example, a majority of retail firms track individual consumer's interaction across multiple channels. Access to this data would be conducive to a more accurate assessment of cross-channel purchasing behavior. Future studies would also be benefitted from a more homogeneous sample set. This study was forced to utilize a variety of retail firms because publicly available information is limited to retailers that trade on regulated exchanges. Wider search parameters were therefore necessary in order to sufficiently populate the sample set.

6. Appendix

Exhibit A.1 – Company Sample List

Ticker	Company Name
ANF	Abercrombie & Fitch Co.
ARO	Aéropostale Inc.
APP	American Apparel, Inc.
AEO	American Eagle Outfitters, Inc.
ANN	ANN INC
AAPL	Apple Inc.
BKS	Barnes & Noble, Inc.
BEBE	Bebe Stores, Inc.
BBBY	Bed Bath & Beyond Inc.
BLKI.B	Belk Inc.
BBY	Best Buy Co., Inc.
BODY	Body Central Corp.
BONT	Bon-Ton Stores Inc.
BWS	Brown Shoe Co. Inc.
BKE	Buckle Inc.
BRBY	Burberry Ltd.
CAB	Cabela's Incorporated
CRI	Carter's, Inc.
DXLG	Casual Male Retail Group, Inc.
CHS	Chico's FAS Inc.
CBK	Christopher & Banks Corporation
COH	Coach, Inc.
CWTR	Coldwater Creek Inc.
COLM	Columbia Sportswear
COST	Costco Wholesale Corporation
CROX	Crocs Inc.
DECK	Deckers Outdoor Corp.
DEST	Destination Maternity Corporation
DKS	Dick's Sporting Goods Inc.
DDS	Dillard's Inc.
DSW	DSW Inc.
EXPR	Express Inc.
FINL	Finish Line Inc.
FL	Foot Locker, Inc.
FOSL	Fossil Inc.
GME	GameStop Corp.
GPS	Gap Inc.
GES	Guess? Inc.
HOTT	Hot Topic Inc.
HBC	Hudson's Bay
BOSS	Hugo Boss
JCP	J. C. Penney Company, Inc.
JOSB	Jos. A Bank Clothiers Inc.
KSS	Kohl's Corp.
LOW	Lowe's Cos. Inc.
LULU	Lululemon Athletica Inc.
LUX	Luxottica Group S.p.A.
NILE	Blue Nile Inc.
M	Macy's, Inc.
NWY	New York & Company Inc.
NKE	Nike Inc.
JWN	Nordstrom Inc.
ODP	Office Depot, Inc.
OMX	OfficeMax Incorporated
PSUN	Pacific Sunwear of California Inc.
PETM	PetSmart, Inc.
RSH	RadioShack Corp.
RL	Ralph Lauren Corporation
RET.A	Reitmans
SKS	Saks Incorporated
SBH	Sally Beauty Holdings Inc.
SHLD	Sears Holdings Corporation
SKX	Skechers USA Inc.
TGT	Target Corp.
PLCE	The Children’s Place Retail Stores, Inc.
MW	The Men's Wearhouse, Inc.
TLYS	Tilly's, Inc.
TUMI	Tumi Holdings, Inc.
ULTA	Ulta Salon, Cosmetics & Fragrance, Inc.
UA	Under Armour Inc.
URBN	Urban Outfitters Inc.
VRA	Vera Bradley, Inc.
VFC	VF Corp.
VSI	Vitamin Shoppe, Inc.
WMT	Wal-Mart Stores Inc.
WTSL	Wet Seal Inc.
WWW	Wolverine World Wide Inc.
ZLC	Zale Corporation
ZUMZ	Zumiez, Inc.

Ticker	CapIQ Name	City	Primary industry	2011 Rev	2011 EBITDA	2011 Ending TEV	2011 Stores	Short business description
ANF	Abercrombie & Fitch Co.	New Albany	Apparel Retail	$3,469	$510	$3,035	1051	Abercrombie & Fitch Co., through its subsidiaries, operates as a specialty retailer of casual apparel for men, women, and kids.
ARO	Aéropostale Inc.	New York	Apparel Retail	$2,400	$452	$807	1112	Aéropostale, Inc., together with its subsidiaries, operates as a mall-based specialty retailer of casual apparel and accessories.
APP	American Apparel, Inc.	Los Angeles	Apparel Retail	$547	$7	$389	251	American Apparel, Inc. engages in the design, manufacture, distribution, and sale of branded fashion basic apparel products, and clothing and accessories for women, men, children, and babies.
AEO	American Eagle Outfitters, Inc.	Pittsburgh	Apparel Retail	$2,945	$481	$3,026	1093	American Eagle Outfitters, Inc., together with its subsidiaries, operates as an apparel and accessories retailer in the United States and Canada.
ANN	ANN INC	New York	Apparel Retail	$1,980	$221	$1,171	984	ANN Inc., through its subsidiaries, engages in the retailing of women's apparel, shoes, and accessories under the Ann Taylor and LOFT brands.
AAPL	Apple Inc.	Cupertino	Computer Hardware	$108,249	$35,604	$363,780	ND	Apple Inc., together with subsidiaries, designs, manufactures, and markets mobile communication and media devices, personal computing products, and portable digital music players worldwide.
BKS	Barnes & Noble, Inc.	New York	Specialty Stores	$6,999	$166	$1,469	ND	Barnes & Noble, Inc. operates as a content, commerce, and technology company in the United States.
BEBE	Bebe Stores, Inc.	Brisbane	Apparel Retail	$493	$29	$186	ND	bebe stores, inc. designs, develops, and produces a line of women's apparel and accessories.
BBBY	Bed Bath & Beyond Inc.	Union	Home Furnishing Retail	$8,759	$1,472	$13,598	ND	Bed Bath & Beyond Inc., together with its subsidiaries, operates a chain of retail stores.
BLKI.B	Belk Inc.	Charlotte	Department Stores	$3,513	$386	$2,072	ND	Belk, Inc., together with its subsidiaries, owns and operates mainline department stores primarily in the southern United States.
BBY	Best Buy Co., Inc.	Richfield	Consumer Goods	$49,747	$3,499	$8,455	4379	Best Buy Co., Inc. operates as an e-commerce and physical retailer of consumer electronics primarily in the United States, Europe, Canada, and China.
BODY	Body Central Corp.	Jacksonville	Apparel Retail	$297	$37	$111	276	Body Central Corp. operates as a specialty retailer of young women's apparel and accessories in the South, Mid-Atlantic, and Midwest regions of the United States.
BONT	Bon-Ton Stores Inc.	York	Department Stores	$3,046	$245	$1,151	271	The Bon-Ton Stores, Inc., through its subsidiaries, operates department stores in the United States.
BWS	Brown Shoe Co. Inc.	St. Louis	Apparel Retail	$2,504	$123	$912	1277	Brown Shoe Company, Inc. operates as a footwear retailer and wholesaler in the United States, Canada, China, and Guam.
BKE	Buckle Inc.	Kearney	Apparel Retail	$950	$242	$2,049	440	The Buckle, Inc. operates as a retailer of casual apparel, footwear, and accessories for young men and women in the continental United States.
BRBY	Burberry Ltd.	London	Apparel Retail	$1,501	$357	$5,592	ND	Burberry Group plc, through its subsidiaries, designs, sources, manufactures, and markets luxury clothing and non-apparel accessories for men, women, and children in the United Kingdom and internationally.
CAB	Cabela's Incorporated	Sidney	Specialty Stores	$2,811	$315	$6,505	40	Cabela's Incorporated, together with its subsidiaries, operates as a specialty retailer and direct marketer of hunting, fishing, camping, and related outdoor merchandise.
CRI	Carter's, Inc.	Atlanta	Apparel Retail	$2,110	$232	$3,209	760	Carter's, Inc., together with its subsidiaries, designs, sources, and markets branded children's wear.
DXLG	Casual Male Retail Group, Inc.	Canton	Apparel Retail	$392	$31	$238	412	Destination XL Group, Inc., together with its subsidiaries, operates as a specialty retailer of big and tall men's apparel in the United States, Canada, and England.
CHS	Chico's FAS Inc.	Fort Myers	Apparel Retail	$1,905	$271	$2,365	1357	Chico's FAS, Inc., together with its subsidiaries, operates as a specialty retailer of private branded, casual-to-dressy clothing, intimates, complementary accessories, and other non-clothing items in the United States.

Ticker	CapIQ Name	City	Primary industry	2011 Rev	2011 EBITDA	2011 Ending TEV	2011 Stores	Short business description
CBK	Christopher & Banks Corporation	Plymouth	Apparel Retail	$448	$14	$189	608	Christopher & Banks Corporation, through its subsidiaries, operates retail stores that provide women's apparel and accessories in the United States.
COH	Coach, Inc.	New York	Apparel Retail	$4,159	$1,430	$13,313	ND	Coach, Inc. engages in the design, marketing, and distribution of handbags, accessories, wearables, footwear, jewelry, sunwear, travel bags, watches, and fragrances for women and men in the United States and internationally.
CWTR	Coldwater Creek Inc.	Sandpoint	Apparel Retail	$981	$19	$136	395	Coldwater Creek Inc. operates as a multi-channel specialty retailer of women's apparel, jewelry, and accessories in the United States.
COLM	Columbia Sportswear	Portland	Apparel Retail	$1,694	$186	$1,645	197	Columbia Sportswear Company, together with its subsidiaries, engages in the design, development, sourcing, marketing, and distribution of outdoor apparel, footwear, accessories, and equipment in the United States, Latin America, the Asia Pacific, Europe, the Middle East, Africa, and Canada.
COST	Costco Wholesale Corporation	Issaquah	Consumer Retail	$88,915	$3,294	$46,379	ND	Costco Wholesale Corporation engages in the operation of membership warehouses.
CROX	Crocs Inc.	Niwot	Footwear	$1,001	$169	$1,019	537	Crocs, Inc., together with its subsidiaries, engages in the design, manufacture, marketing, and distribution of footwear, apparel, and accessories for men, women, and children in the Americas, Europe, and Asia.
DECK	Deckers Outdoor Corp.	Goleta	Footwear	$1,377	$314	$1,826	77	Deckers Outdoor Corporation engages in the design, manufacture, and marketing of footwear and accessories for outdoor activities and casual lifestyle use for men, women, and children in the United States and internationally.
DEST	Destination Maternity Corporation	Philadelphia	Apparel Retail	$545	$52	$294	ND	Destination Maternity Corporation engages in the design and retail of maternity clothing in the United States.
DKS	Dick's Sporting Goods Inc.	Coraopolis	Specialty Stores	$4,871	$430	$5,482	599	Dick's Sporting Goods, Inc. operates as a sports and fitness retailer primarily in the Eastern United States.
DDS	Dillard's Inc.	Little Rock	Department Stores	$6,258	$601	$4,460	302	Dillard's, Inc. operates as a fashion apparel, cosmetics, and home furnishing retailer in the United States.
DSW	DSW Inc.	Columbus	Apparel Retail	$1,822	$222	$2,556	364	DSW Inc. operates as a branded footwear and accessories specialty retailer in the United States.
EXPR	Express Inc.	Columbus	Apparel Retail	$1,906	$283	$1,504	640	Express, Inc. operates as a specialty apparel and accessory retailer primarily in the United States.
FINL	Finish Line Inc.	Indianapolis	Apparel Retail	$1,229	$138	$737	672	The Finish Line, Inc., together with its subsidiaries, operates as a mall-based specialty retailer in the United States.
FL	Foot Locker, Inc.	New York	Apparel Retail	$5,049	$378	$4,272	ND	Foot Locker, Inc., together with its subsidiaries, operates as a retailer of athletic footwear and apparel.
FOSL	Fossil Inc.	Richardson	Apparel Retail	$2,567	$525	$5,449	ND	Fossil, Inc., together with its subsidiaries, engages in the design, development, marketing, and distribution of consumer fashion accessories worldwide.
GME	GameStop Corp.	Grapevine	Consumer Goods	$9,474	$841	$2,939	6602	GameStop Corp. operates as a video game retailer.
GPS	Gap Inc.	San Francisco	Apparel Retail	$14,664	$2,624	$16,366	3407	The Gap, Inc. operates as an apparel retail company.
GES	Guess? Inc.	Los Angeles	Apparel Retail	$2,487	$478	$1,828	1690	Guess?, Inc. designs, markets, distributes, and licenses lifestyle collections of contemporary apparel and accessories for men, women, and children that reflect the American lifestyle and European fashion sensibilities.
HOTT	Hot Topic Inc.	City of Industry	Apparel Retail	$708	$33	$516	813	Hot Topic, Inc. operates as a mall and Web-based specialty retailer in the United States.
HBC	Hudson's Bay	Toronto	Department Stores	$3,718	$253	$3,242	ND	Hudson's Bay Company operates as a retailer offering a selection branded merchandise in Canada and the United States.

Ticker	CapIQ Name	City	Primary industry	2011 Rev	2011 EBITDA	2011 Ending TEV	2011 Stores	Short business description
BOSS	Hugo Boss	Metzingen	Apparel Retail	$2,059	$465	$6,295	2040	HUGO BOSS AG provides fashion and luxury goods of the apparel market worldwide.
JCP	J. C. Penney Company, Inc.	Plano	Department Stores	$17,759	$1,347	$5,249	1114	J. C. Penney Company, Inc., through its subsidiary, J. C. Penney Corporation, Inc., operates department stores.
JOSB	Jos. A Bank Clothiers Inc.	Hampstead	Apparel Retail	$858	$167	$819	ND	Jos.
KSS	Kohl's Corp.	Menomonee Falls	Department Stores	$18,391	$2,842	$14,164	1146	Kohl's Corporation operates department stores in the United States.
LOW	Lowe's Cos. Inc.	Mooresville	Home Improvement Retail	$48,815	$5,325	$49,796	1754	Lowe's Companies, Inc., together with its subsidiaries, operates as a home improvement retailer.
LULU	Lululemon Athletica Inc.	Vancouver	Apparel Retail	$712	$205	$8,544	211	lululemon athletica inc., together with its subsidiaries, designs, manufactures, and distributes athletic apparel and accessories for women, men, and female youth.
LUX	Luxottica Group S.p.A.	Milan	Apparel Retail	$6,222	$1,136	$20,625	ND	Luxottica Group S.p.A., together with its subsidiaries, provides fashion, luxury, and sports eyewear worldwide.
M	Macy's, Inc.	Cincinnati	Department Stores	$25,003	$3,069	$21,707	853	Macy's, Inc., together with its subsidiaries, operates stores and Internet Websites in the United States.
NWY	New York & Company Inc.	New York	Apparel Retail	$1,022	($7)	$191	519	New York & Company, Inc., together with its subsidiaries, operates as a specialty retailer of women's fashion apparel and accessories in the United States.
NKE	Nike Inc.	Beaverton	Footwear	$20,862	$3,166	$49,036	ND	NIKE, Inc., together with its subsidiaries, engages in the design, development, marketing, and sale of footwear, apparel, equipment, and accessories for men, women, and children worldwide.
JWN	Nordstrom Inc.	Seattle	Department Stores	$9,700	$1,370	$12,610	240	Nordstrom, Inc., a fashion specialty retailer, offers apparel, shoes, cosmetics, and accessories for women, men, and children in the United States.
ODP	Office Depot, Inc.	Boca Raton	Specialty Stores	$11,490	$262	$1,473	1629	Office Depot, Inc., together with its subsidiaries, supplies office products and services.
OMX	OfficeMax Incorporated	Naperville	Specialty Stores	$7,121	$202	$1,538	941	OfficeMax Incorporated, together with its subsidiaries, distributes business-to-business and retail office products.
PSUN	Pacific Sunwear of California Inc.	Anaheim	Apparel Retail	$837	($14)	$176	644	Pacific Sunwear of California, Inc., together with its subsidiaries, operates as a specialty retailer in the action sports, fashion, and music influences of the California lifestyle.
PETM	PetSmart, Inc.	Phoenix	Specialty Stores	$5,694	$665	$6,643	1278	PetSmart, Inc., together with its subsidiaries, operates as a specialty retailer of products, services, and solutions for pets in the United States, Puerto Rico, and Canada.
RSH	RadioShack Corp.	Fort Worth	Consumer Goods	$4,378	$275	$557	7200	RadioShack Corporation engages in the retail sale of consumer electronics goods and services through its RadioShack store chain.
RL	Ralph Lauren Corporation	New York	Apparel Retail	$5,660	$1,047	$14,196	ND	Ralph Lauren Corporation engages in the design, marketing, and distribution of lifestyle products.
RET.A	Reitmans	Montreal	Apparel Retail	$1,059	$182	$488	ND	Reitmans (Canada) Limited operates as a ladies' wear specialty apparel retailer in Canada.
SKS	Saks Incorporated	New York	Department Stores	$2,786	$222	$1,921	113	Saks Incorporated operates retail stores in the United States.
SBH	Sally Beauty Holdings Inc.	Denton	Specialty Stores	$3,269	$487	$6,633	ND	Sally Beauty Holdings, Inc., through its subsidiaries, engages in the distribution and retail of professional beauty supplies primarily in North America, South America, and Europe.

Ticker	CapIQ Name	City	Primary industry	2011 Rev	2011 EBITDA	2011 Ending TEV	2011 Stores	Short business description
SHLD	Sears Holdings Corporation	Hoffman Estates	Department Stores	$42,664	$1,265	$8,309	2548	Sears Holdings Corporation operates as a specialty retailer in the United States and Canada.
SKX	Skechers USA Inc.	Manhattan Beach	Footwear	$1,614	($51)	$930	349	Skechers U.S.A., Inc. engages in the design, development, marketing, and distribution of footwear for men, women, and children.
TGT	Target Corp.	Minneapolis	General Merchandise Stores	$67,390	$7,336	$61,007	1778	Target Corporation operates general merchandise stores in the United States.
PLCE	The Children's Place Retail Stores, Inc.	Secaucus	Apparel Retail	$1,674	$196	$831	1111	The Children's Place Retail Stores, Inc. operates as a children's specialty apparel retailer in North America.
MW	The Men's Wearhouse, Inc.	Houston	Apparel Retail	$2,103	$192	$1,540	1143	The Men's Wearhouse, Inc., together with its subsidiaries, operates as a specialty apparel retailer in the United States and Canada.
TLYS	Tilly's, Inc.	Irvine	Apparel Retail	$333	$40	$291	168	Tilly's, Inc., though its subsidiary, operates a chain of specialty retail stores featuring casual clothing, footwear, and accessories for teens and young adults in the United States.
TUMI	Tumi Holdings, Inc.	South Plainfield	Consumer Goods	$330	$71	$1,452	114	Tumi Holdings, Inc. designs, produces, and markets travel products, business cases, and accessories.
ULTA	Ulta Salon, Cosmetics & Fragrance, Inc.	Bolingbrook	Specialty Stores	$1,455	$184	$4,940	550	Ulta Salon, Cosmetics & Fragrance, Inc. operates as a beauty retailer that provides prestige, mass, and salon products; and salon services in the United States.
UA	Under Armour Inc.	Baltimore	Apparel, Accessories and Luxury Goods	$1,473	$199	$5,143	108	Under Armour, Inc. engages in the development, marketing, and distribution of branded performance apparel, footwear, and accessories for men, women, and youth primarily in North America, the Middle East, Africa, Asia, and Latin America.
URBN	Urban Outfitters Inc.	Philadelphia	Apparel Retail	$2,274	$507	$5,356	476	Urban Outfitters Inc. operates lifestyle specialty retail stores under the Urban Outfitters, Anthropologie, Free People, Terrain, and BHLDN brand names in the United States, Canada, and Europe.
VRA	Vera Bradley, Inc.	Fort Wayne	Apparel, Accessories and Luxury Goods	$366	$62	$939	76	Vera Bradley, Inc., through its subsidiary, Vera Bradley Designs, Inc., engages in the design, production, marketing, and retail of stylish and functional accessories for women under the 'Vera Bradley' brand.
VFC	VF Corp.	Greensboro	Apparel, Accessories and Luxury Goods	$9,459	$1,477	$19,883	1129	V.F. Corporation designs and manufactures, or sources from independent contractors various apparel and footwear products primarily in the United States and Europe.
VSI	Vitamin Shoppe, Inc.	North Bergen	Specialty Stores	$857	$97	$1,367	579	Vitamin Shoppe, Inc., through its subsidiaries, operates as a specialty retailer and direct marketer of nutritional products in the United States.
WMT	Wal-Mart Stores Inc.	Bentonville	Consumer Goods	$421,849	$33,183	$302,623	10773	Wal-Mart Stores, Inc. operates retail stores in various formats worldwide.
WTSL	Wet Seal Inc.	Foothill Ranch	Apparel Retail	$581	$46	$160	530	The Wet Seal, Inc., a specialty retailer, operates stores that sell fashionable and contemporary apparel and accessory items for female customers.
WWW	Wolverine World Wide Inc.	Rockford	Footwear	$1,409	$186	$3,266	99	Wolverine World Wide, Inc. designs, manufactures, sources, and markets branded footwear, apparel, and accessories.
ZLC	Zale Corporation	Irving	Specialty Stores	$1,743	$21	$584	ND	Zale Corporation, together with its subsidiaries, operates as a specialty retailer of fine jewelry in North America.
ZUMZ	Zumiez, Inc.	Lynnwood	Apparel Retail	$479	$60	$595	500	Zumiez Inc. operates as a multi-channel specialty retailer of action sports related apparel, footwear, accessories, and hardgoods.

Exhibit A.2 – Quarterly Retail and e-Commerce Sales (United States Census Bureau)

Quarter	Retail Sales (millions of dollars)		E-commerce as a Percent of	Percent Change From Prior Quarter		Percent Change From Same Quarter A Year Ago	
	Total	E-commerce	Total	Total	E-commerce	Total	E-commerce
4th quarter 2012(p)	1,106,823	59,545	5.4	1.4	4.4	4.0	15.6
3rd quarter 2012(r)	1,091,897	57,034	5.2	1.4	3.8	4.6	17.4
2nd quarter 2012	1,076,950	54,936	5.1	-0.3	3.5	4.3	15.5
1st quarter 2012	1,080,064	53,091	4.9	1.5	3.1	6.2	15.3
4th quarter 2011(r)	1,064,205	51,497	4.8	1.9	6.0	7.4	14.9
3rd quarter 2011	1,044,153	48,585	4.7	1.2	2.1	8.9	12.9
2nd quarter 2011	1,032,271	47,575	4.6	1.5	3.3	8.4	15.7
1st quarter 2011	1,016,544	46,065	4.5	2.6	2.8	8.3	17.2
4th quarter 2010	990,726	44,819	4.5	3.3	4.1	7.2	17.4
3rd quarter 2010	958,694	43,043	4.5	0.7	4.7	4.6	16.1
2nd quarter 2010	952,070	41,112	4.3	1.4	4.6	6.4	16.9
1st quarter 2010	938,772	39,295	4.2	1.6	3.0	5.1	14.9
4th quarter 2009	924,422	38,163	4.1	0.9	2.9	1.1	14.4
3rd quarter 2009	916,317	37,075	4.0	2.4	5.4	-8.5	2.5
2nd quarter 2009	894,646	35,174	3.9	0.2	2.8	-11.8	-4.1
1st quarter 2009	893,218	34,206	3.8	-2.3	2.6	-11.4	-5.8
4th quarter 2008	914,671	33,345	3.6	-8.6	-7.8	-10.0	-8.1
3rd quarter 2008	1,001,058	36,164	3.6	-1.3	-1.4	-0.2	3.2
2nd quarter 2008	1,014,183	36,668	3.6	0.6	1.0	1.9	8.0
1st quarter 2008	1,008,585	36,321	3.6	-0.8	0.1	2.2	12.7
4th quarter 2007	1,016,382	36,275	3.6	1.3	3.5	4.2	18.5
3rd quarter 2007	1,003,356	35,046	3.5	0.8	3.2	3.1	20.0
2nd quarter 2007	994,919	33,943	3.4	0.8	5.3	2.9	22.0
1st quarter 2007	986,642	32,222	3.3	1.2	5.2	2.3	19.9
4th quarter 2006	975,402	30,615	3.1	0.2	4.8	4.0	23.7
3rd quarter 2006	973,393	29,205	3.0	0.7	5.0	4.2	21.5
2nd quarter 2006	966,992	27,818	2.9	0.3	3.5	5.5	23.3
1st quarter 2006	964,469	26,885	2.8	2.8	8.6	7.3	26.4
4th quarter 2005	938,329	24,746	2.6	0.5	2.9	5.3	23.5
3rd quarter 2005	933,986	24,039	2.6	1.9	6.5	7.5	27.0
2nd quarter 2005	916,869	22,564	2.5	2.1	6.0	7.2	26.2
1st quarter 2005	898,438	21,278	2.4	0.8	6.2	6.2	24.4
4th quarter 2004	891,125	20,040	2.2	2.6	5.9	7.3	26.2
3rd quarter 2004	868,612	18,929	2.2	1.5	5.9	4.9	25.5
2nd quarter 2004	855,491	17,878	2.1	1.1	4.5	6.3	27.4
1st quarter 2004	846,177	17,110	2.0	1.9	7.8	6.0	31.4
4th quarter 2003	830,759	15,876	1.9	0.4	5.2	5.0	27.8
3rd quarter 2003	827,778	15,085	1.8	2.8	7.5	5.0	29.6
2nd quarter 2003	805,050	14,032	1.7	0.8	7.8	3.4	29.0
1st quarter 2003	798,355	13,018	1.6	0.9	4.8	3.5	28.8
4th quarter 2002	791,375	12,419	1.6	0.4	6.7	0.8	31.8
3rd quarter 2002	788,441	11,639	1.5	1.2	7.0	4.1	39.3
2nd quarter 2002	778,751	10,876	1.4	1.0	7.6	1.9	29.2
1st quarter 2002	771,114	10,107	1.3	-1.8	7.2	2.0	22.4
4th quarter 2001	784,995	9,426	1.2	3.6	12.8	4.4	20.0
3rd quarter 2001	757,455	8,355	1.1	-0.9	-0.8	1.5	13.2
2nd quarter 2001	764,048	8,419	1.1	1.1	1.9	3.2	29.4
1st quarter 2001	755,812	8,260	1.1	0.5	5.2	2.1	41.9
4th quarter 2000	752,106	7,853	1.0	0.7	6.4	4.0	71.9
3rd quarter 2000	746,607	7,378	1.0	0.9	13.4	5.4	NA
2nd quarter 2000	740,186	6,508	0.9	0.0	11.8	6.9	NA
1st quarter 2000	740,482	5,822	0.8	2.3	27.4	9.3	NA
4th quarter 1999	723,506	4,569	0.6	2.2	NA	9.0	NA

Exhibit A.3 – Web Traffic as a Requisite for Online Revenue[1]

Model: $(\text{Online Revenue})_{it} = \beta X_{it} + \alpha$

This analysis seeks to model the relationship between web traffic and online revenue. The assumption is that more visitors to a retailer's website would correlate to higher online sales. X is defined as monthly unique visitors and monthly visitors in the first and second model, respectively. The monthly unique visitors figure represents the number of individuals that visit a retailer's website while the monthly visitors figure represents the total number of times a retailer's webpage was visited. More detailed information for each model can be found below:

X =	Monthly Unique Visitors	**X =**	Monthly Visitors
β **Coefficient**	**31.408**	β **Coefficient**	**8.571**
Standard Error	2.692	Standard Error	3.410
P-Value	**0.000**	**P-Value**	**0.012**
Observations	275	Observations	275
Observations Per Group	73	Observations Per Group	73

The purpose of these analyses is to establish the fact that generating web traffic is necessary to increase online revenues. The model confirms that an additional monthly unique visitor and monthly visit correlate to $31.41 and $8.571 of online revenue respectively. The underlying principle may seem intuitively obvious, but establishing this concept is a necessary for subsequent analysis. For a more detailed discussion of the theory, see *Section 4.2.2*.

Exhibit A.4 Brick-and-Mortar Investment Driving Web Traffic[1]

Model 1: $(\text{Increase / Decrease in Monthly Unique Visitors})_{it} = \beta X_{it} + \alpha$

X =	Capital Expenditures
β **Coefficient**	**3,817.746**
Standard Error	1,354.779
P-Value	**0.005**
Observations	241
Observations Per Group	69

1. Companies that do not disclose relevant information are excluded from this analysis

Model 2: (Increase / Decrease in Monthly Visitors)$_{it}$ = $\beta X_{it} + \alpha$

	Capital Expenditures
β **Coefficient**	**8,490.506**
Standard Error	2,742.268
P-Value	**0.002**
Observations	241
Observations Per Group	69

The above regressions model the relationship between capital expenditures and web traffic. The theory behind this analysis is that brick-and-mortar locations are instrumental in attracting online consumers. Ultimately, this model underlines the idea that brick-and-mortar and online operations have a synergistic relationship. For a more detailed discussion of the theory, see *Section 4.2.3*.

Exhibit A.5 - Margin Trends for Sample Companies 2007 – 2011[1]

	Mean			Median		
	GM%	Retail GM %	EBITDAR %	GM%	Retail GM %	EBITDAR %
2007	42%	34%	18%	43%	36%	18%
2008	42%	33%	17%	41%	36%	17%
2009	41%	34%	17%	41%	35%	16%
2010	42%	35%	18%	41%	37%	17%
2011	43%	36%	18%	41%	38%	18%

For a complete list of sample companies, see Exhibit A. 1

1. Companies that do not disclose relevant information are excluded from this analysis

Exhibit A.6 Channel Growth Rate Comparison[1]

Model 2: $(\text{Retail Revenue Growth})_{it} = \beta X_{it} + \alpha$

	Online Revenue Growth
Coefficient	**0.129**
Standard Error	0.031
P-Value	**0.000**
Observations	220
Observations Per Group	68

This model is also predicated on an assumption of channel synergism. This means that growth in one channel is conducive to growth in the other. This is based on the emerging omni-channel consumer behavior trend in which consumers interact with companies using multiple channels. The β coefficient in this model represents the idea that growth in online sales will correlate to growth in brick-and-mortar operations. . For a more detailed discussion of the theory, see *Section 4.2.5*.

Exhibit A.7 Brick-and-Mortar Profitability Analysis[1]

Model: $(\text{Brick-and-Mortar Gross Margin})_{it} = \beta 1 X1_{it} + \beta 2 X2_{it} + \alpha$

X =	X1 = Online Sales / Total Normal Revenue	X2 = Total Online Revenue
β **Coefficient**	**22.635**	**0.003**
Standard Error	7.430	0.001
P-Value	**0.002**	**0.053**
Observations	224	
Observations Per Group	59	

The purpose of this regression is to examine the complementary nature of brick-and-mortar stores and e-commerce operations. The first independent variable (X1) is the percentage of revenues derived from online sales, which indicates a retailer's reliance on the internet. The second is total online revenue, which represents a retailer's online revenue earning power. The dependent variable (brick-and-mortar gross margin) represents the ability of a firm to command premium prices. The purpose of this regression is to empirically establish

1. Companies that do not disclose relevant information are excluded from this analysis

evidence for channel synergism, which states that the two D2C channels are complementary. For a more detailed discussion of the theory, see *Section 4.2.6*.

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